Amendments to the Claims:

1. (Original) An ultra-wide-band (UWB) physical layer using time-frequency interleaved (TFI) orthogonal frequency division multiplexing (OFDM) within the 3.1 – 10.6 GHz UWB band, to provide a wireless personal area network (PAN) having data payload communication capabilities of 55, 110, and 200 Mb/s.

2. (Original) The UWB physical layer according to claim 1, wherein the UWB physical layer further employs TFI-OFDM within the 3.1 – 10.6 GHz UWB band, to provide a wireless PAN having data payload communication capabilities of 80, 160, 320 and 480 Mb/s.

3. (Original) The UWB physical layer according to claim 1, wherein the UWB physical layer is configured to operate as a full-band system.

4. (Original) The UWB physical layer according to claim 3, wherein the UWB physical layer is further configured to generate a single OFDM symbol solely from a contiguous subset of tones.

5. (Original) The UWB physical layer according to claim 4, wherein the UWB physical layer is further configured to employ different subset of tones between consecutive OFDM symbols.

6. (Original) The UWB physical layer according to claim 5, wherein the UWB physical layer is further configured to vary the subset of tones as a function of time such that the UWB physical layer achieves the same transmit power as a full-band signal that occupies the complete bandwidth spanned by an inverse fast fourier transform.

7. (Original) The UWB physical layer according to claim 4, wherein the UWB physical layer is further configured to generate a signal having a bandwidth greater than 500 MHz in response to 122 tones.

8. (Original) The UWB physical layer according to claim 4, wherein the UWB physical layer is further configured to generate a single OFDM symbol solely from a contiguous subset of tones, wherein each subset contains 128 consecutive tones.

9. (Original) The UWB physical layer according to claim 1, wherein the UWB physical layer is configured to operate as a sub-band system.

10. (Original) The UWB physical layer according to claim 9, wherein the UWB physical layer is further configured to generate OFDM symbols interleaved across both time and frequency.

11. (Original) The UWB physical layer according to claim 10, wherein the UWB physical layer is further configured to insert a guard interval immediately following each OFDM symbol.

12. (Original) An ultra-wide-band (UWB) physical layer comprising a UWB transmitter generating time-frequency interleaved (TFI) orthogonal frequency division multiplexed (OFDM) signals within the 3.1 – 10.6 GHz UWB band, such that the UWB band is divided into smaller sub-bands.

13. (Original) The UWB physical layer according to claim 12, wherein the UWB transmitter further generates a guard interval immediately following each OFDM symbol, and wherein the guard interval has a time period sufficient to allow the UWB transmitter to switch from one channel to another.

14. (Original) The UWB physical layer according to claim 12, further comprising a UWB receiver configured to receive TFI-OFDM signals, wherein the UWB transmitter and the UWB receiver together form a personal area network (PAN).

15. (Original) A modulation scheme for ultra-wideband (UWB) systems, the scheme comprising the method steps of:

providing a UWB physical layer operational to generate orthogonal frequency division multiplexed (OFDM) symbols within a desired band;

interleaving the OFDM symbols across both time and frequency to divide the desired band into smaller sub-bands; and

inserting a guard interval after each OFDM symbol, such that the UWB physical layer has sufficient time to switch from its current channel to the next channel.

16. (Original) The modulation scheme according to claim 15, wherein the desired band comprises the 3.1 – 10.6 GHz UWB band.

17. (Original) The modulation scheme according to claim 15, wherein the physical layer is further operational to support a wireless personal area network (PAN) having data payload communication capabilities of 55, 80, 110, 160, 200, 320 and 480 Mb/s.

18. (Original) The modulation scheme according to claim 15, wherein the UWB physical layer is further operational to generate a single OFDM symbol solely from a contiguous subset of tones.

19. (Original) The modulation scheme according to claim 15, wherein the UWB physical layer is further operational to employ different subset of tones between consecutive OFDM symbols.

20. (Original) The modulation scheme according to claim 19, wherein the UWB physical layer is further operational to vary the subset of tones as a function of time such that the UWB physical layer achieves the same transmit power as a full-band signal that occupies the complete bandwidth spanned by an inverse fast fourier transform.

21. (Original) The modulation scheme according to claim 15, wherein the UWB physical layer is further operational to generate a signal having a bandwidth greater than 500 MHz in response to 122 tones.

22. (Original) The modulation scheme according to claim 15, wherein the UWB physical layer is further configured to generate a single OFDM symbol solely from a contiguous subset of tones, wherein each subset contains 128 consecutive tones.